IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Neal et al.	Attorney Docket No.: DEM1P009
Application No.: 10/007,002	Examiner: Ruhl, Dennis William
Filed: November 30, 2001	Group: 3689
Title: RULE RELAXATION AND SUBSET OPTIMIZATION SYSTEM	Confirmation No.: 9261

FILED VIA EFS

May 29, 2008

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF UNDER 37 C.F.R. 41.37

Further to the Notice of Appeal filed in this application on March 19, 2008, this Appeal Brief is being submitted to the Board of Patent Appeals and Interferences.

TABLE OF CONTENTS

Dear Sirs:

Appellants hereby appeal the decision of the primary examiner mailed November 19, 2007. The Appeal Board is thanked for their review of the application.

I.   REAL PARTY IN INTEREST

The real party in interest is DemandTec Corporation, a corporation of the state of Delaware, the assignee of all rights, title and interest in the present application from applicants Michael Neal, Krishna Venkatraman, Rob Parkin, Suzanne Valentine, Phil Delurgio and Hau Lee, recorded in the United States Patent and Trademark Office at reel/frame 012690/0547.

II.   RELATED APPEALS AND INTERFERENCES

Based upon information and belief, there are no appeals or interferences that could directly affect or be directly affected by or have a bearing on the decision by the Board of Patent Appeals and Interferences in the pending appeal.

III.   STATUS OF THE CLAIMS

The final rejection of Claims 1-4, 9, 14-19 and 25-30 is being appealed. These appealed claims are reproduced in the Claims Appendix hereto.

IV.   STATUS OF THE AMENDMENTS

No amendment has been filed since the mailing on November 19, 2007 of the final Office Action herein.

V.   SUMMARY OF THE CLAIMED SUBJECT MATTER

The appealed independent Claims 1 and 14 relate to the pricing of products for retailers and wholesalers. Proper pricing of goods and services is integral to the success of a business. As such, pricing systems, including price optimization systems, are highly valued by businesses and fulfill an important role in business decision making and planning.

The present invention is capable of providing optimized pricing for a subset of a plurality of products for a plurality of stores. This invention may set prices with the goal of maximizing profit, demand, margin, or a variety of other objectives. This system utilizes impressive statistical engines in conjunction with novel organization of products, pricing, and optimization rules.

The claims of this application address the organization and selection of products for optimization, and the handling of rules. Claims 1-4, 9, 14-19 and 25-30 are currently pending in this application.

This organization and selection of products enables the system to provide optimization for a relatively small subset of products, while still providing a major impact upon the optimization goal (be it profit, revenue, or margin). Due to the complexity of demand modeling, optimizations ultimately require vast computing resources, which tend to increase exponentially as the number of products optimized for increases. By optimizing for only the subset of products, computation resources are conserved, and, importantly, the logistical challenges of physically updating prices are lessened. For a retailer, with literally thousands of products, limiting these logistic challenges and computational burdens may be of extreme importance.

Moreover, the unique handling of optimization rules, by means of incremental rule relaxation of the lowest priority rule enabling feasibility, results in rapid rule conflict resolution while applying the best rule set possible.

In particular, Claims 1 and 14 state "**prioritize[ing]** the plurality of relaxable rules. . . **identifying at least one lower priority infeasible rule** from the plurality of relaxable rules . . . **incrementally relax[ing]** any infeasible rule of the plurality of relaxable rules **which has a lower priority than the at least one lower priority infeasible rule**, enabling the at least one lower priority infeasible rule to become feasible; **designate[ing] a subset of products** of the plurality of products, wherein the number of products in the subset of products is less than the number of products in the plurality of products; and **optimiz[ing] prices for products in the subset of products**, while maintaining the initial prices of all other products of the plurality of products, and wherein the optimizing of prices complies with the relaxed any infeasible rule of the plurality of rules." (Emphasis Added).

Claims 2 and 15 state "wherein the ... designating a subset [enables] a **number N to be designated**, [and wherein selecting] no more than N products of the plurality of products to form the subset of products, [and] wherein the selected no more than N products has **the largest impact on the optimization of prices of any subset** of no more than N products of the plurality of products, and further wherein the largest impact on the optimization is **determined by ranking all products by a marginal contribution to the optimization** and selecting the no more than N products **by a mixed integer problem**." (Emphasis Added).

Claims 3 and 16 state "[providing] an optimization of at least one of total **profit**, **sales volume**, and **revenue** for the subset of products." (Emphasis Added).

Likewise, Claims 25-28 state, respectively, "provides an optimization of total revenue" or "sales volume" or "total revenue for the subset of products."

Claim 19 states "the new data comprises new price data and **new price bound data**, and wherein new price bound data **includes changes in costs, base price, competitive prices, point-of-sale data, product information and store information**." (Emphasis Added).

Claims 29 and 30 state " [rule parameters includes] at least one of group price change, brand pricing rules, size pricing rules, unit pricing rules, line pricing rules, cluster pricing rules, gross margin rule, store volume rule and competition rules."

Appellants assert that all pending Claims 1-4, 9, 14-19 and 25-30 are novel and non-obvious over the cited art for all the reasons given below.

VI.   GROUNDS OF REJECTION TO REVIEWED ON APPEAL

The Board is being asked to review the final rejection of Claims 1-4, 9, 14-19 and 25-30 under 35 U.S.C. 112 and under 35 U.S.C. 102(b) as being unpatentable over Reuhl et al. (US 5,873,069) (hereafter referred to as Reuhl et al.).

VII.   REMARKS/ARGUMENTS

Appellants thank the Appeal Board for the review of this Appeal Brief. Appellants will now address the patentability of the present invention, with particular attention paid to the rejections made by the Examiner in response to the Amendment dated August 20, 2007, which is hereby incorporated by reference.

For the sake of clarity, Appellants have divided the arguments into various subsections; however, this is not intended to be limiting of the arguments contained therein. Thus, arguments in one subsection may be applied to all applicable subsections.

A. RESPONSE TO REJECTION OF THE CLAIMS UNDER 35 USC §112

Examiner rejected the claims under 35 USC 112, both under first and second paragraphs. Appellants believe that there is no basis for such rejections; and, as such, outline their arguments below. However, Appellants believe a pragmatic and reasonable amending of the claims would be acceptable should the Appeal Board believe it would aid in alleviate concerns under 35 USC 112.

a.   Rejection under 35 USC §112, First Paragraph

The Examiner rejected claims 1-4, 9, 25, 26 and 29 under 35 U.S.C. 112, first paragraph. In particular, the Examiner stated that "the limitation that the rule prioritizer is configured to '*prioritize*' a plurality of relaxable rules is considered to be new matter." Examiner believes that "the user, not the system itself, decides the priority of the rules." (Original Emphasis).

Appellants disagree that this is new matter. The method of prioritization is defined within the specification as filed at page 21, lines 14-16 stating that "**rules are prioritized** (step 604). A default prioritization may be provided, with an interface, which may allow a user to change the prioritization from the default." (Emphasis Added). Moreover, in the specification as originally filed, Claim 8 stated "computer readable code for allowing the prioritization of a plurality of rules". Also see figure 6, and page 22, lines 14-18 in the specification as filed.

Appellants believe that the disclosure reasonably supports "a rule prioritizer configured to prioritize the plurality of relaxable rules" as in Claim 1. This 'prioritize', in light of the specification, may be dictated by a default prioritization and allows for a user configuration, if desired. The rules are stored in the system, and, regardless of priority order, the system applies this priority to the rule set, hence 'prioritizing' the rules.

Appellants believe the disclosure in the original application adequately covers this material, and thus it is not new.

Furthermore, the Examiner rejected claims 2 and 15 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

In particular the Examiner stated that "*ranking all products by a marginal contribution to the optimization and selecting no more than N products by a mixed integer* [requires] that one of skill in the art would have to undergo undue experimentation to practice the claimed invention."

Support for dependent Claims 2 and 15 may be found in page 27, lines 10-19 of the Specification as filed, which states that "[t]he subset optimization may choose the products that **comprise this subset in a way that has the largest impact on the client's objective function**. If, for example, the client's objective is to maximize profit, it is desirable to populate the subset of products whose prices are allowed to change with those products that are most likely to have the largest impact on profit. In one way of doing this, **all of the available products may be ranked by their marginal contribution to the objective and then the subset of products whose prices are allowed to change is selected via mixed integer program**. . ." (Emphasis Added).

Support may also be found in page 33, lines 5-23 of the Specification as filed, which states that "[i]n selecting the N products that will comprise the set of products, R, which are allowed to have price changes in the subset optimization, a simple mixed integer problem is solved. A binary variable, r_k, is created that indicates whether or not a given product is chosen to become a member of R. An objective function is the sum of these binary variables weighted by the maximum marginal value on each product's price obtained in the step of constructing the set of candidates for subset optimization . . . This problem can be written as $Max_r \left[\sum_{k \in C} r_k \cdot Max \left(\left| \lambda_k^l \right|, \left| \lambda_k^u \right| \right) \right]$

subject to $\sum_{k \in C} r_k \leq n$. The set of products, R, may be defined to be considered in subset

optimization as $k \in R : \left\{ (k \in C \mid r_k = 1) \cup (k \in C \mid k \text{ has change in state}) \right\}$."

Also, at page 30, lines 13-14 which states "λ_k^u and λ_k^l are defined as the marginal values on the upper and lower bounds defined in the final inequality constraints." Appellants believe that this completely enables Claims 2 and 15.

Additionally, the Appeal Board is urged to review the entirety of subsections entitled "Construction of the Set of Candidates for Subset Optimization" and "Selection of the Set of Products for Subset Optimization" found on pages 28 and 33, respectively, of the specification as filed.

Appellants believe the specification as filed adequately enables this material as providing the means, both in descriptive and equation form, for one skilled in the art to implement the invention with minimal to no experimentation.

b. Rejection under 35 USC §112, Second Paragraph

Furthermore, the Examiner rejected Claims 2 and 15 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In particular the Examiner stated that "*the selected no more than N products has the largest impact on the optimization of prices of any subset of no more than N products of the plurality of products, and further wherein the largest impact on the optimization is determined by ranking all products by a marginal contribution to the optimization and selecting no more than N products by a mixed integer problem*" is indefinite . . . [o]ne wishing to avoid infringement would have no idea what products are defined by this language and which products are not defined by this language."

As noted above, support for dependent Claims 2 and 15 may be found in page 27, lines 10-19 of the Specification as filed, which states that "[t]he subset optimization may choose the products that **comprise this subset in a way that has the largest impact on the client's objective function**. If, for example, the client's objective is to maximize profit, it is desirable to populate the subset of products whose prices are allowed to change with those products that are most likely to have the largest impact on profit. In one way of doing this, **all of the available products may be ranked by their marginal contribution to the objective and then the**

subset of products whose prices are allowed to change is selected via mixed integer program. . ." (Emphasis Added).

Support may also be found in page 33, lines 5-23 of the Specification as filed, which states that "[i]n selecting the N products that will comprise the set of products, R, which are allowed to have price changes in the subset optimization, a simple mixed integer problem is solved. A binary variable, r_k, is created that indicates whether or not a given product is chosen to become a member of R. An objective function is the sum of these binary variables weighted by the maximum marginal value on each product's price obtained in the step of constructing the set of candidates for subset optimization . . . This problem can be written as $\underset{r}{Max}\left[\sum_{k \in C} r_k \cdot Max\left(\left|\lambda_k^l\right|, \left|\lambda_k^u\right|\right)\right]$

subject to $\sum_{k \in C} r_k \leq n$. The set of products, R, may be defined to be considered in subset optimization as $k \in R : \left\{(k \in C \mid r_k = 1) \cup (k \in C \mid k \text{ has change in state})\right\}$."

Also at page 30, lines 13-14, which states "λ_k^u and λ_k^l are defined as the marginal values on the upper and lower bounds defined in the final inequality constraints." Appellants believe that this specifically defines Claims 2 and 15.

Again, the Appeal Board is urged to review the entirety of subsections entitled "Construction of the Set of Candidates for Subset Optimization" and "Selection of the Set of Products for Subset Optimization" found on pages 28 and 33, respectively, of the specification as filed.

Appellants believe the specification as filed adequately defines these Claims such that one wishing to avoid infringement would be able to devise a system which does not solve the integer problem, as disclosed, to rank products by marginal contribution to the optimization objective in order to determine which products are selected for subset optimization. As such, claims are definite as stated.

B. RESPONSE TO REJECTION OF THE CLAIMS UNDER 35 USC §102

The examiner has additionally rejected all pending Claims 1-4, 9, 14-19 and 25-30 under 35 U.S.C. § 102(b) as being anticipated by Reuhl et al. (US 5,873,069). Appellants believe that there is no basis for such rejection. In response to this rejection, Appellants will provide a brief discussion of Reuhl et al. and discuss the specific rejections of related claims below.

a.   Discussion and Characterization of Reuhl et al.

Reuhl et al. is "characterized by an ability to automatically **implement price responses to market changes** . . . the pricing response is directed to **having the lowest price for any particular product** based on price comparisons on the same . . . product sold by competitors." (Emphasis Added). See column 6, lines 29-35. Reuhl et al. appears to simply reduce prices below competitors' prices, and ending in the digit "9" (i.e. $1.99). See Column 6, lines 31-35, Column 11, lines 34-43 and Column 12, lines 34-53.

As such, Reuhl et al. appears to have only two criteria (1) the last digit ending in a nine, and (2) a lower price than the competitor. These criteria are static, and both of these conditions must be actualized for Reuhl et al. to function.

b.   Regarding Claims 1 and 14

Claims 1 and 14 have been rejected by the examiner in light of Reuhl et al. Appellants believe this rejection is erroneous and unfounded. Below is a listing of arguments where Reuhl et al. is contrasted with the Claimed invention. It will become clear that Reuhl et al. and the present invention differ greatly in regard to scope, breadth, thrust and means of accomplishing their respective objectives.

i.   Reuhl et al. Fails to Disclose Price Optimization as Claimed

The Examiner rejected Claims 1 and 14 stating "Reuhl discloses a method and system (with software) where product sales and price data is entered into a computer system and the system then 'optimizes' (optimization engine) the prices of numerous products . . . [t]he system is optimizing in the sense that they are making the system determine the best price, which to Reuhl, is the **lowest price**." (Emphasis Added).

Appellants respectfully disagree with the Examiner's statement, in that Reuhl et al. does not appear to teach a method of **price optimization** as claimed. Instead, Reuhl et al., as previously noted, appears to simply reduce prices below competitors' prices ("lowest price"), and ending in the digit "9" (i.e. $1.99). See Column 6, lines 31-35, Column 11, lines 34-43 and Column 12, lines 34-37. Reuhl et al's system of price setting is a single-faceted **pricing policy**, whereas the present invention is multi-faceted, and capable of providing **an array of configurable optimization objectives**, including "total profit, sales volume, and revenue." See Claim 3; also see page 9, lines 9-19, page 10, lines 12-13, page 15, line 17, and page 17 lines 3-10 of the Specification as filed.

As such, Claims 1 and 14 are believed allowable over the cited art. All dependent claims, as depending from allowable parent claims, are also allowable for at least the same reasons.

ii.   Reuhl et al. Fails to Disclose Rule Prioritization as Claimed

The Examiner additionally stated that "[t]he software has a rule prioritizer with criteria (rules) for figuring out the final pricing of the products. **The rules include looking for sales prices, advertised prices, etc., as well as applying a cent code to the resulting lowest price, and then the rules check to ensure that the new active price with the cent code is not greater than the competitor price.** If the new price with the cent code results in the price being higher than the competitor price, then a new active price is calculated by incrementally relaxing the cent code rule (done by a rule relaxation module portion of the software) . . . **The rules are**

prioritized as claimed because the rules for figuring out prices look to various conditions and moves on to other conditions if prior conditions are not feasible (result in the price being higher that the competitor)" (Emphasis added).

Appellants respectfully disagree with the Examiner's statement, in that Reuhl et al. does not appear to teach a method of **rule prioritization** as claimed. Instead, as previously noted, Reuhl appears to have only two criteria (1) the last digit ending in a nine, and (2) a lower price than the competitor. These criteria are **static**. For Reuhl et al. to function, both of these conditions must be actualized. As such, Applicants believe that Reuhl et al. does not teach or suggest the "prioritize[ing] the plurality of relaxable rules" as claimed in Claims 1 and 14, where **rules are numerous (plurality) and configurable**.

As such, Claims 1 and 14 are believed allowable over the cited art. All dependent claims, as depending from allowable parent claims, are also allowable for at least the same reasons.

iii.   Reuhl et al. Fails to Disclose Rule Setting as Claimed

Moreover, even if one were to consider Reuhl et al. as disclosing a plurality of rules, Appellants believe that Reuhl et al. does not disclose "set[ing] a plurality of relaxable rules, wherein the plurality of relaxable rules is set utilizing rule parameters, wherein the rule editor utilizes default values of the rule parameters, and further wherein the rule editor enables configuring of the rule parameters by a user" as in Claims 1 and 14.

In response, the Examiner stated he "considers this to be inherent to Reuhl . . . In Reuhl a person had to program the system and write the computer program that runs the optimization. **All computer programs are capable of being edited and changed** if one desired to do so. In Reuhl there is an inherent ability to set the rules **any way a user wants, you just need to change the programming**." (Emphasis added).

The Examiner's mere statement of opinion that this limitation is inherent to Reuhl et al. is unfounded and unsupported. "To serve as an anticipation when the reference is silent about the

asserted inherent characteristic, such gap in the reference may be filled with recourse to extrinsic evidence. **Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference**, and that it would be so recognized by persons of ordinary skill." *Continental Can Co. USA v. Monsanto Co.,* 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). (Emphasis Added). Appellants believe that Reuhl et al. is not enabled to have dynamic rule configuration as claimed. Nor does Reuhl et al. teach or suggest rule editing.

Moreover, were the Examiner's statements to be accepted, all inventions where at least one embodiment is that of a software program could be **used as prior art for anything** the Examiner desired, after all "**you just need to change the programming.**" (Emphasis Added).

As such, Claims 1 and 14 are believed allowable over the cited art. All dependent claims, as depending from allowable parent claims, are also allowable for at least the same reasons.

iv.   Reuhl et al. Fails to Disclose Product Designation as Claimed

Lastly, the Examiner additionally stated that "Reuhl discloses a product designator configured to designate a subset of products. This is because **the computer system (software) only optimizes prices for products that have had new sales data entered into the system.**" (Emphasis Added).

Base Claims 1 and 14 state that the invention is configured to "**designate a subset of products of the plurality of products**, wherein the number of products in the subset of products is less than the number of products in the plurality of products." (Emphasis Added).

The plain meaning definition of 'designate' is "to indicate and set apart for specific purpose, office, or duty." (Merriam Webster's Dictionary, 11th edition). This is an **active** process of indicating products. Reuhl et al. modifies prices for each and every product that there is new data for. This is not an active designation, particularly when viewed in light of the specification as filed which qualifies 'product designation' as an intricate process where "[i]n

selecting the N products that will comprise the set of products, R, which are allowed to have price changes in the subset optimization, a simple mixed integer problem is solved." See page 33, lines 8-11.

As such, Claims 1 and 14 are believed allowable over the cited art. All dependent claims, as depending from allowable parent claims, are also allowable for at least the same reasons.

C.   REGARDING CLAIMS 2 AND 15

Claims 2 and 15 have been rejected by the Examiner in light of Reuhl et al. Appellants believe this rejection is erroneous and unfounded. The Examiner, in support for his rejection, stated that "[i]n the opinion of the examiner all that is claimed is the ability to designate a number N or allowing a number to be designated (which is not even actually designate, just allowing it to occur). The manner by which the number is determined is not given much weight because this can be done by the person and not the system."

Appellants believe that the Examiner is mistaken. The claim clearly states 1) a number N is designated, 2) a **subset of products is selected** (up to that number of products), 3) wherein the selected no more than N products **has the largest impact on the optimization** of prices of any subset, and 4) the method of product selection (i.e. ranking all products by a marginal contribution to the optimization and solving a mixed integer problem). These limitations are not taught, suggested, or even contemplated by Reuhl et al. Contrary, Reuhl et al. appears to simply modify price of all products that have new sales data.

This ability to perform subset optimization, as disclosed by the present invention, is crucial in instances where total inventories are large, and changing prices in the store requires significant logistics and man-hours, such as in a retail setting. Appellants believe that the Examiner's cursory dismissal of these claims is erroneous and flippant.

As such, Claims 2 and 15 are believed allowable over the cited art for these reasons, and for the reason of depending upon allowable parent claims.

D.   REGARDING CLAIMS 3, 16 AND 25-28

Claims 3, 16 and 25-28 have been rejected by the examiner in light of Reuhl et al. Appellants believe this rejection is erroneous and unfounded. The Examiner, in support for his rejection, stated that "Reuhl results in prices for items that are optimized for profit, total revenue, and sales volume. The intent . . . is to make money[; thus] **by ensuring that your prices are lower than competitors' prices, you are optimizing the prices for profit, total revenue, and sales volume at the same time**." (Emphasis Added).

Appellants are concerned with the Examiner's apparent lack of knowledge regarding demand modeling and price optimization. Setting ones prices below a competitor's prices will not magically optimize profit, revenue and sales. Not to say that Reuhl et al. is without merit; as a general rule, setting prices below a competitor may be a perfectly adequate pricing policy, particularly when more advanced optimization systems are unavailable. However, Reuhl et al. does **not** fulfill these goals of optimizing profit, revenue and sales.

Very infrequently will a single price fulfill all three objectives of optimizing profit, revenue and sales volume. For example, optimizing for sales volume typically involves deep discounts, which cuts into profits (or may even cost the retailer out-of-pocket). This may be desired if a company is trying to gain market share aggressively, or as incentive to draw customers (i.e. door busters). Likewise, some products may optimize for profit if they are *more expensive* than competitors, such as low visibility products, staples, low volume and high end products.

As such, to state that "Reuhl results in prices for items that are optimized for profit, total revenue, and sales volume" is unfounded and preposterous. As such, Claims 3, 16 and 25-28 are believed allowable over the cited art for these reasons, and for the reason of depending upon allowable parent claims.

E.   REGARDING CLAIM 19

Claim 19 has been rejected by the examiner in light of Reuhl et al. Appellants believe this rejection is erroneous and unfounded. The Examiner, in support for his rejection, stated that "the new price bound data is the identification of the product . . . [w]hen a competitor changes the price of an item, data is received that identifies the product and the new price . . . This satisfies what is claimed."

Appellants direct the Appeal Board's attention to Claim 19 which states "wherein the new data comprises new price data and new price bound data, and **wherein new price bound data includes changes in costs, base price, competitive prices, point-of-sale data, product information and store information.**" (Emphasis Added).

Examiner appears to have redefined 'new price bound data' to mean purely "identification of the product". However, 'new price bound data' has been explicitly defined within Claim 19 as including "changes in costs, base price, competitive prices, point-of-sale data, product information and store information." Reuhl et al. does not disclose, teach or suggest this, or anything remotely close to this, definition of 'new price bound data' as claimed. As such, Claim 19 is believed allowable over the cited art for these reasons, and for the reason of depending upon an allowable parent claim.

F.   REGARDING CLAIMS 29 AND 30

Claims 29 and 30 have been rejected by the examiner in light of Reuhl et al. Appellants believe this rejection is erroneous and unfounded. The Examiner, in support for his rejection, stated that "because **the ability to change the programming** one is **capable of configuring** a unit price rule. This would be the change in price for a given product. A product is a unit (i.e. singular)." (Emphasis Added).

Appellants direct the Appeal Board's attention to the Claims 29 and 30 which state "[rule parameters] includes at least one of group price change, brand pricing rules, size pricing rules, unit pricing rules, line pricing rules, cluster pricing rules, gross margin rule, store volume rule and competition rules." More than 'unit pricing rules' are contemplated by the configuration of rules. Examiner does not address these other rules.

Moreover, reiterating Appellants earlier concerns, were the Examiner's statements to be accepted, all inventions where at least one embodiment is that of a software program, could be **used as prior art for <u>anything</u>** the Examiner desired. After all "because [of] the ability to **change the programming one is capable of configuring** [just about anything]" (Emphasis Added).

Lastly, Examiner misunderstood what 'unit pricing rule' means. Each of the rules listed in these claims is distinctly, clearly, and deliberately defined within the specification as filed. See pages 16, line 11 to page 20, line 15 for a listing of rules and definitions. Unit pricing rule are defined by "create a set $\text{Unit}_{s,i} \equiv \left\{ \left(p_{s,i,l_i}, p_{s,i,k_2} \right) : e_{s,i,k_1} p_{s,i,k_1} \right.$ must cost less than $\left. e_{s,i,k_2} p_{s,i,k_2} \right\}$, where $e_{s,i,k}$ is the multiplicative factor to convert equivalent units into whole product units. This leads to the following constraints: $\forall s, i$ and $\left(p_{s,i,k_1}, p_{s,i,k_2} \right) \in \text{Unit}_{s,i} \ e_{s,i,k_1} p_{s,i,k_1} \leq e_{s,i,k_2} p_{s,i,k_2}$." See page 18, lines 5-15. Reuhl et al. does not teach, suggest or even contemplate such a unit pricing rule. Likewise, Appellants believe that none of the rules listed in Claims 29 and 30 are taught or suggested by Reuhl et al.

As such, Claims 29 and 30 are believed allowable over the cited art for these reasons, and for the reason of depending upon allowable parent claims.

G. CONCLUSION

In sum, Appellants believe that all pending Claims 1-4, 9, 14-19 and 25-30 are allowable over the cited art and are also in allowable form and respectfully request a Notice of Allowance for this application from the Appeal Board. The commissioner has been authorized via EFS (credit card) to charge the amount of $510.00 to cover the Appeal Brief fee. The commissioner is authorized to charge any other fees that may be due or credit any overpayment to our Deposit Account No. 50-2766 (Order No. DEM1P009). Should the Appeal Board believe that a telephone conference would expedite the prosecution of this appeal, the undersigned can be reached at telephone number 925-570-8198.

LAW OFFICES OF KANG S. LIM

3494 Camino Tassajara Road #436
Danville, CA 94506
Voice: (925) 570 8198
Facsimile: (925) 736 3974

Respectfully submitted,

/Kang S. Lim/

Kang S. Lim

Attorney for Applicant(s)
Reg. No. 37,491
CUSTOMER NO. 36088

VIII. LISTING OF CLAIMS APPENDIX:

What is claimed is:

1.   A computer implemented, price optimization system for optimizing a preferred set of prices for a subset of a plurality of products, comprising:

a rule editor configured to set a plurality of relaxable rules, wherein the plurality of relaxable rules is set utilizing rule parameters, wherein the rule editor utilizes default values of the rule parameters, and further wherein the rule editor enables configuring of the rule parameters by a user;

a rule prioritizer configured to prioritize the plurality of relaxable rules, and for identifying at least one lower priority infeasible rule from the plurality of relaxable rules;

a rule relaxation module configured to incrementally relax any infeasible rule of the plurality of relaxable rules which has a lower priority than the at least one lower priority infeasible rule, enabling the at least one lower priority infeasible rule to become feasible;

a database configured to store initial prices for a plurality of products;

a product designator configured to designate a subset of products of the plurality of products, wherein the number of products in the subset of products is less than the number of products in the plurality of products; and

an optimization engine configured to optimize prices for products in the subset of products, while maintaining the initial prices of all other products of the plurality of products and wherein the optimizing of prices complies with the relaxed any infeasible rule of the plurality of rules.

2.   The price optimization system, as recited in claim 1, wherein the product designator for designating a subset enables a number N to be designated, and wherein the product designator selects no more than N products of the plurality of products to form the subset of products, and wherein the selected no more than N products has the largest impact on the optimization of prices of any subset of no more than N products of the plurality of products, and further wherein the largest impact on the optimization is determined by ranking all products by a marginal contribution to the optimization and selecting the no more than N products by a mixed integer problem.

3.   The price optimization system, as recited in claim 2, wherein the optimization engine provides an optimization of at least one of total profit, sales volume, and revenue for the subset of products.

4.   The price optimization system, as recited in claim 3, wherein the optimization engine provides initial prices by optimizing prices for all of the plurality of products.

Claims 5 - 8.   (Cancelled)

9.   The price optimization system, as recited in claim 1, wherein the optimization engine provides initial prices by optimizing prices for all of the plurality of products.

Claims 10 – 13.   (Cancelled)

14.   In a computer system, a method for computing a preferred set of prices for a subset of products of a plurality of products, comprising:

setting, using the computer system, a plurality of relaxable rules, wherein the setting of rules utilizes rule parameters, and wherein the rule parameters include default rule parameters and configured rule parameters;

prioritizing, using the computer system, the plurality of relaxable rules;

identifying, using the computer system, at least one lower priority infeasible rule from the plurality of relaxable rules;

incrementally relaxing, using the computer system, any infeasible rule of the plurality of rules which has a lower priority than the at least one lower priority infeasible rule to allow the at least one lower priority infeasible rule of the plurality of rules to become feasible;

storing, using the computer system, initial prices for a plurality of products;

designating, using the computer system, a subset of products of the plurality of products, wherein the number of products in the subset of products is less than the number of products in the plurality of products; and

optimizing, using the computer system, prices for products in the subset of products, while maintaining the initial prices of products of the plurality of products that are not in the subset of products, and wherein the optimizing of prices complies with the relaxed any infeasible rule of the plurality of rules.

15.   The method, as recited in claim 14, wherein the designating a subset comprises:

allowing a number N to be designated; and

selecting no more than N products of the plurality of products to form the subset of products, wherein the selecting no more than N products has the largest impact on the optimizing of prices of any subset of no more than N products of the plurality of products, and further wherein the largest impact on the optimization is determined by ranking all products by a marginal contribution to the optimization and selecting the no more than N products by a mixed integer problem.

16.   The method, as recited in claim 15, further comprising providing, using the computer system, an optimization of at least one of total profit, sales volume, and revenue for the subset of products.

17.   The method, as recited in claim 14, further comprising providing, using the computer system, initial prices by optimizing prices for all of the plurality of products.

18.   The method, as recited in claim 17, further comprising providing, using the computer system, new data subsequent to providing initial prices by optimizing prices.

19.   The method, as recited in claim 18, wherein the new data comprises new price data and new price bound data, and wherein new price bound data includes changes in costs, base price, competitive prices, point-of-sale data, product information and store information.

Claims 20-24.   (Canceled)

25.   The price optimization system, as recited in claim 1, wherein the optimization engine provides an optimization of total revenue for the subset of products.

26.   The price optimization system, as recited in claim 1, wherein the optimization engine provides an optimization of sales volume for at least one product of the subset of products.

27.   The method, as recited in claim 15, further comprising providing, using the computer system, an optimization of total revenue for the subset of products.

28.   The method, as recited in claim 15, further comprising providing, using the computer system, an optimization of sales volume for at least one product of the subset of products.

29.   The price optimization system, as recited in claim 1, wherein the rule editor enables configuration of at least one of group price change, brand pricing rules, size pricing rules, unit pricing rules, line pricing rules, cluster pricing rules, gross margin rule, store volume rule and competition rules.

30.   The method, as recited in claim 14, wherein the rule parameters includes at least one of group price change, brand pricing rules, size pricing rules, unit pricing rules, line pricing rules, cluster pricing rules, gross margin rule, store volume rule and competition rules.

IX.   EVIDENCE APPENDIX

X.   RELATED PROCEEDINGS APPENDIX